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| EXAMINER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/621,791 | Applicant(s) YAMAGAMI, KENJI | |
| | Examiner Patrick A. Darno | Art Unit 2163 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>12102005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-23 are pending in this office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-7 and 9-13 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Number 6,839,819 issued to Marcia Reid Martin (hereinafter "Martin").

Claim 1:

Martin teaches a method for processing data in a data store comprising:

obtaining a snapshot of a data store (Martin: column 2, lines 47-50; The mirror-in-the-middle (MIM) is what the applicant refers to as a snapshot. It is a copy of the primary storage that has journal entries applied to it for the purpose of restoring that copy (the MIM) to another point in time (Martin: column 6, lines 28-32). Additional intermediate snapshots are created as the restore/recovery process proceeds.);

updating the snapshot with one or more first after-journal entries (Martin: column 8, lines 52-56; The forward journal entries are what the applicant refers to as after-journal entries.); and

after updating the snapshot with one or more first after-journal entries, performing one or more subsequent updates of the snapshot with one or more second after-journal entries (Martin: column 8, lines 52-56; The reference says that forward journal entries are used to update the MIM. Since the word entries is plural, multiple entries where applied to the MIM to update it. This starts with a first journal entry that is applied, followed by other subsequent forward journal entries to be applied.), each subsequent update of the snapshot including:

storing a before-journal entry (Martin: column 9, lines 1-4 and column 16, lines 54-55; The first reference given here clearly identifies that the backward journal entry is exactly the same as the before-journal entry claimed by the applicant. The backward journal entry stores the data originally in the MIM (snapshot) that is to be overwritten by the after-journal entry (forward journal entry). The second reference given here clearly points out that the before-journal entry is stored.); and

after storing the before-journal entry, applying one of the second after-journal entries to the snapshot (Martin: column 9, lines 43-45; Describes applying forward journal entries to update the MIM (snapshot) in the next step after storing the before-journal entries (backward journal entries). Also see Fig. 10, steps 1004 to 1006.),

wherein the subsequent updates of the snapshot can be undone (Martin: column 9, lines 4-8; These lines state that before journal (backward journal entries) entries are stored for the purpose of recovering the contents of storage immediately before the after journal (forward journal) entries are use to update the snapshot (MIM). Recovering the contents after an update has been made requires that the updates must be undone.).

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Claim 2:

Martin teaches all the elements of claim 1, as noted above, and Martin also teaches a method further comprising after performing one or more subsequent updates, applying one or more before-journal entries to the snapshot, wherein one or more updates of the snapshot by the second after-journal entries can be undone (Martin: column 9, lines 4-8; See rejection of claim 1 for an explanation of this reference.).

Claim 3:

Martin teaches all the elements of claim 2, as noted above, and Martin further teaches a method comprising receiving information indicative of an undo request, and in response thereto performing the step of applying one or more before-journal entries to the snapshot (Martin: column 6, lines 25-32 and column 18, lines 62-64; In the first reference the "snapshots" are the original data that is to be updated by an after-journal entry (or forward journal entry). These "snapshots" are stored in a backward journal entry (before journal entry) and are applied to the MIM (snapshot disclosed by applicant) in order to reverse or undo changes. The second reference shows that upon receiving a request, Martin's invention is capable of accessing replicated data, as the replicated data existed at a requested point in time. This means that by requesting a rollback of a forward journal entry (after journal entry) that backward journal entry (before journal entry) would be applied to the MIM (snapshot)).

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Claim 4:

Martin teaches all the elements of claim 1, as noted above, and Martin further teaches a method wherein the number of the first after-journal entries is determined based on a user-provided target time (Martin: column 5, lines 28-35 and column 18, lines 62-64).

Claim 5:

Martin teaches all the elements of claim 1, as noted above, and Martin further teaches a method wherein the second after-journal entries are applied in increasing order of time (Martin: column 6, lines 1-9 and line 27; The forward journal entries are combined from oldest time to a requested time in order (increasing order of time) to determine a net change to be reflected on the snapshot (MIM). Then the net change is applied to the snapshot (MIM).).

Claim 6:

Martin teaches all the elements of claim 1, as noted above, and Martin further teaches a method wherein the step of updating the snapshot with one or more first after-journal entries includes further updating the snapshot with one or more additional after-journal entries (Martin: column 8, lines 52-56; The reference says that forward journal **entries** are used to update the MIM. Since the word entries is plural, multiple entries where applied to the MIM to update it. This starts with a first journal entry that is applied, followed by other additional forward journal entries to be applied.), wherein the step of further updating is performed in response to receiving information indicative of a fast recovery request (Martin: column 6, lines 1-9 and line 27; This reference discusses

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simply applying the forward journal entries (after journal entries) to the MIM (snapshot).

This is what the applicant describes as "fast recovery" in the applicant's specification.

Further, as cited above, the restore/recovery operations are requested. So by requesting that only forward journal entries (after journal entries) are used to update the MIM (snapshot), the request is effectively a request for the fast recovery mode to be implemented.).

Claim 7:

Martin teaches all the elements of claim 1, as noted above, and Martin further teaches a method wherein the step of obtaining a snapshot includes making a copy of the snapshot on the data store (Martin: column 2, lines 47-50; The MIM is the snapshot claimed by the applicant.), wherein the updating steps are performed on the copy of the snapshot stored on the data store (Martin: column 8, lines 52-56; For explanation of this reference see rejections given above.).

Claim 9:

Martin teaches a data processing device comprising:

a data store (Martin: Fig. 1, 114);

a controller (Martin: Fig. 1, 112 and column 4, line 65 - column 5, line 14);

a data storage component configured to store after-journal entries and before-journal entries and further configured to provide access to the after-journal entries and the before-journal entries (Martin: Fig. 1, 114 and column 16, lines 54-55 and column 5, lines 7-9; The first reference is the diagram of the data store. The second reference shows that both types of journal entries are stored on the data store (Random-Access

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Storage). And the third reference shows that the controller access the data store.

Since the controller accesses the data store, the data store must "provide access" to its contents.),

the controller configured to access the data store and to access the data storage component (Martin: Fig. 1, 112 and column 4, line 65 - column 5, line 14),

the controller further configured to perform the method steps of claim 1 (See rejection for claim 1 given above.).

Claim 10:

Martin teaches method for processing data comprising:

obtaining a snapshot of at least a portion of a data store (Martin: column 2, lines 47-50; The mirror-in-the-middle (MIM) is what the applicant refers to as a snapshot. It is a copy of the primary storage that has journal entries applied to it for the purpose of restoring that copy (the MIM) to another point in time (Martin: column 6, lines 28-32). Additional intermediate snapshots are created as the restore/recovery process proceeds.);

applying a plurality of first after-journal entries to update the snapshot, including receiving a first time indication from a user, the number of first after-journal entries being based on the first time indication (Martin: column 8, lines 52-56; The reference says that forward journal entries are used to update the MIM. Since the word "entries" is plural, multiple entries were applied to the MIM to update it. If a lot of writes have taken place since the users requested restore point (users first time indication), more journal entries will need to be applied. So the number of first journal entries that need to be applied

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depend upon the time the user requests as the restore point and how many journal writes have taken place since the requested restore point.);

providing access to the snapshot so that the user can access the snapshot (Martin: column 6, lines 28-32 and column 15, lines 4-7; The first reference shows "retrieving" a desired copy of the snapshot (MIM) by applying appropriate journal changes to the snapshot (MIM). The second reference shows that a computer program is utilized for retrieving an update of the snapshot (MIM) as disclosed by the invention.);

receiving a recovery mode indication and a second time indication from the user (Martin: column 5, lines 28-35 and column 18, lines 62-64 and column 15, lines 4-7; The first two references show that a time can be give to restore the snapshot (MIM) to a specific point. The third reference shows that a computer program is used to allow a user to carry out the steps of Martin's invention.);

applying a plurality of second after-journal entries to further update the snapshot, the number of second after-journal entries being based on the second indication (Martin: column 8, lines 52-56 and column 15, lines 4-7; See explanation of this reference given earlier in this claim. A second indication is simply giving a second restore point. The same functional steps are carried out. And again note that the second reference is given to show that a program is provided to allow the user to indicate points in time to restore the document.); and

if the recovery mode indication is indicative of an undo-able recovery mode, then for each second after-journal entry, taking a before-journal entry of the snapshot before applying the second after-journal snapshot (Martin: column 9, lines 1-9 and 42-45).

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Claim 11:

Martin teaches all the elements of claim 10, as noted above, and Martin further teaches a method further comprising receiving a third time indication from the user and applying one or more before-journal entries to the snapshot, the number of before-journal entries that are applied to the snapshot being dependent on the third time indication (Martin: column 6, lines 38-37 and column 9, lines 1-8; The first reference shows how journals are applied to the snapshot (MIM) to restore it to a certain point in time. The second reference shows that before journal entries (backward journals) are one type of the journal entry that can be applied.).

Claim 12:

Martin teaches all the elements of claim 10, and Martin further teaches a data processing system comprising:

a host component comprising at least one host processing unit (Martin: Fig. 1, 112 and column 4, line 65 - column 5, line 14; The host component is the Data management appliance Fig. 1, 112.);

a storage component comprising at least one storage control unit (Martin: Fig. 1, 114; The storage component is the random-access storage Fig. 1, 114. The storage control unit is the same as the host processing unit (Data Management Appliance Fig. 1, 112).);

first program control means contained in the host component for controlling operation of the host processing unit (Martin: column 5, lines 1-7); and

second control means contained in the storage component for controlling operation of the storage control unit (Martin: column 5, lines 1-7; Since the same control unit handles both functions in the Martin reference, the first and second program control means are one program control means. That program control means is the embedded stored program.),

the first program control means and the second program control means further for operating, respectively, the host processing unit and the storage control unit to perform the method steps of claim 10 (Martin: column 5, lines 1-7; Also see rejection of claim 10.).

Claim 13:

Martin teaches all the elements of claim 12, as noted above, and Martin further teaches wherein the first program control means comprises first program code and the second program control means comprises second program code (Martin: column 5, lines 1-7; One control means performs the exact function of the two control means presented by the applicant. Therefore, there will be only one program code. And that program code is the embedded stored program in column 5, line 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 8 and 14-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,839,819 issued to Marcia Reid Martin (hereinafter "Martin") further in view of U.S. Patent Application Publication Number 2004/0133575 issued to David Farmer et al. (hereinafter "Farmer").

Claim 8:

Martin discloses all the elements of claim 1, as noted above, and Martin further discloses a method wherein the step of obtaining a snapshot includes making a copy of the snapshot (Martin: column 2, lines 47-50; The MIM is the snapshot claimed by the applicant.), wherein the updating steps performed on the copy of the snapshot (Martin: column 8, lines 52-56; For explanation of this reference see rejections given above.). While the examiner believes that there is sufficient evidence in the disclosure of Martin to show that there is a means for receiving input from the user to select a specific data store (Martin: column 15, lines 4-7), it is noted that Martin does not explicitly disclose a method comprising receiving information indicative of a user-specified data store.

However, Farmer discloses a method comprising receiving information indicative of a user-specified data store (Farmer: paragraph [0034], lines 1-6; This reference discloses how the user can specify the volume and the server (data store) that the snapshot should be made on and where the update steps should be performed.). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the teachings of Martin with the teachings of Farmer noted above for the purpose of adding a list-box for the user to specify the data store to be used. The skilled artisan would have been motivated to improve the invention of Martin per the

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above such that a graphical user interface is presented to the user allowing the user to specify a unique data source (Farmer: paragraph [0034], lines 6-8).

Claim 14:

Martin discloses a method for processing data on a data store comprising:

obtaining a snapshot of at least a portion of the first data volume (Martin: column 2, lines 47-50; The mirror-in-the-middle (MIM) is what the applicant refers to as a snapshot. It is a copy of the primary storage that has journal entries applied to it for the purpose of restoring that copy (the MIM) to another point in time (Martin: column 6, lines 28-32). Additional intermediate snapshots are created as the restore/recovery process proceeds. The primary data store is the first volume.);

storing the snapshot on the second data volume (Martin: column 5, lines 66-67; The second volume is the random access storage.);

a first step of updating the snapshot with a plurality of first after-journal entries (Martin: column 8, lines 52-56; The forward journal entries are after-journal entries.);

providing user-access to the second data volume (Martin: column 15, lines 4-7; This notes that a program is utilized to give the user access to the functionality presented by the invention of Martin. This includes the second data volume above.);

receiving a first indication from the user, wherein if the first indication is indicative of a fast recovery operation, then repeating the first step of updating the snapshot with a plurality of second after-journal entries (Martin: column 5, lines 66-67 and column 15, lines 4-7); and

subsequent to the first step of updating, a second step of updating the snapshot with a plurality of third after-journal entries, including for each third after-journal entry taking a before-journal entry of the snapshot prior to updating the snapshot with the third after-journal entry (Martin: column 9, lines 1-9 and 42-45; Explanations to this reference is given in the rejections above.),

the first, second, and third after-journal entries being representative of write operations previously performed on the first data volume (Martin: column 2, lines 51-53; As stated above, the forward journal entries in the reference are the after-journal entries presented by the applicant. This reference here states that the forward journal entries are write events to the original file.).

While the examiner believes that there is sufficient evidence in the disclosure of Martin to show that there is a means for receiving input from the user to select a specific data store (Martin: column 15, lines 4-7), it is noted that Martin does not explicitly disclose receiving input from a user indicative of a first data volume; and receiving input from the user indicative of a second data volume. However, Farmer discloses receiving input from a user indicative of a first data volume (Farmer: paragraph [0034], lines 1-6 and Fig. 6, 610); and receiving input from the user indicative of a second data volume (Farmer: paragraph [0034], lines 1-6 and Fig. 6, 612). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the teachings of Martin with the teachings of Farmer noted above for the purpose of adding a list-box for the user to specify the data store to be used. The skilled artisan would have been motivated to improve the invention of Martin per the above such that a

graphical user interface is presented to the user allowing the user to specify a unique data source (Farmer: paragraph [0034], lines 6-8).

Claim 15:

The combination of Martin and Farmer discloses all the elements of claim 14, as noted above, and Martin further discloses comprising receiving input from the user indicative of a target time wherein the number of first after-journal entries is based on the target time (Martin: column 5, lines 28-35 and column 18, lines 62-64 and column 15, lines 4-7).

Claim 16:

The combination of Martin and Farmer discloses all the elements of claim 15, as noted above, and Martin further discloses receiving input from the user indicative of a refined target time wherein the number of second after-journal entries is based on the refined target time (Martin: column 8, lines 52-56; The reference says that forward journal **entries** are used to update the MIM. Since the word "entries" is plural, multiple entries were applied to the MIM to update it. If a lot of writes have taken place since the users requested restore point (users first time indication), more journal entries will need to be applied. So the number of first journal entries that need to be applied depend upon the time the user requests as the restore point and how many journal writes have taken place since the requested restore point. The "refined time" has nothing to do with the functional aspects of the invention. A "refined time" is simply a new time input by the user to restore the snapshot (MIM) to another point of interest to the user. This is done in Martin by simply choosing a new time.).

Claim 17:

The combination of Martin and Farmer discloses all the elements of claim 15, as noted above, and Martin further discloses receiving from the user indicative of a refined target time wherein the number of third after-journal entries is based on the refined target time (Martin: column 8, lines 52-56; See explanation of this reference in rejection of claim 16.).

Claim 18:

The combination of Martin and Farmer discloses all the elements of claim 14, as noted above, and Martin further discloses applying one or more before-journal entries to the snapshot to undo snapshot updates produced by the application of one or more of the third after-journal entries (Martin: column 6, lines 38-37 and column 9, lines 1-8; The first reference shows how journals are applied to the snapshot (MIM) to restore it to a certain point in time. The second reference shows that before journal entries (backward journals) are one type of the journal entry that can be applied.).

Claim 19:

The combination of Martin and Farmer discloses all the elements of claim 14, as noted above, and Martin further discloses receiving a second indication from the user and in response thereto, applying one or more before-journal entries to the snapshot to undo snapshot updates produced by the application of one ore more third after-journal entries (Martin: column 6, lines 38-37 and column 9, lines 1-8; The first reference shows how journals are applied to the snapshot (MIM) to restore it to a certain point in time.

The second reference shows that before journal entries (backward journals) are one type of the journal entry that can be applied.).

Claim 20:

The combination of Martin and Farmer discloses all the elements of claim 19, as noted above, and Martin further discloses receiving input from the user indicative of a time, wherein the number of before-journal entries is based on the time (Martin: column 8, lines 52-56; See rejection of claim 16 for an explanation of this reference. Note that backward journal entries are a type of journal entry that can be applied in the same manner as the forward journal entries. So the same reasoning holds for this rejection as the rejection of claim 16).

Claim 21:

The combination of Martin and Farmer discloses all the elements of claim 19, as noted above, and Martin further discloses wherein the one or more before-journal entries are applied sequentially beginning with the most recent before-journal entry (Martin: column 6, lines 1-9 and line 27; The forward journal entries are combined from oldest time to a requested time in order (increasing order of time) to determine a net change to be reflected on the snapshot (MIM). Then the net change is applied to the snapshot (MIM). Note again that the backward journal entries are applied in the same manner as the forward journal entries.).

Claim 22:

The combination of Martin and Farmer discloses all the elements of claim 14, as noted above, and Martin further discloses wherein the first data volume and the second

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data volume refer to the same data volume, wherein the snapshot represents a data state of at least a portion of the first data volume at a first point in time (Martin: column 2, lines 47-50; This reference shows taking a snapshot (MIM) of a data store at a point in time. The decision as to having one or two memories is strictly design choice.).

Claim 23:

The combination of Martin and Farmer discloses all the elements of claim 14, as noted above, and Martin further discloses wherein the first data volume is a production volume and the second data volume refers to a data volume different from the production volume (Martin: Fig. 1, 108 is the production volume and Fig. 1, 114 is the second data volume. They are both different data volumes.).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick A. Darno whose telephone number is (571) 272-0788. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on (571) 272-4023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Patrick A. Darno
Examiner
Art Unit 2163


